



## **Africa RISING Technical Report Template**

*Instruction: This template should be used for interim and full technical reports.*

### **Reporting Period**

### **Section A. Partner Information**

**A.1. Institution:** **ICRISAT**

**A.2. Contact person:** **Dr Baloua NEBIE**

**A.3. Intervention sites, country:** **Mali**

**A.4. Other partners:** **Dr Aboubacar Toure; Mr Mamourou Sidibe, Dr Abdoulaye Diallo**

### **Section B. Progress/achievements during the reporting period**

**Executive summary of achievements**

## B.1. Achievements (progress and/or results) against outputs towards outcome 1

Project Outcome 1: Outcome 1: Farmers and farming communities in the project area are practicing more productive, resilient, profitable and sustainably intensified crop-livestock systems linked to markets.				
Output 1.1: Research products for more productive, intensive, diverse, profitable and resilient crop (cereals, legumes, vegetables), livestock (sheep, goats, cattle, poultry and pigs) and integrated crop-livestock farming systems are identified and disseminated to farmers through development partners.	Planned Activities 1. Promoting high yielding hybrids and dual/multi-purpose sorghum for crop-livestock integration and income generation in Sikasso Region 2. 3.	Planned Milestones 1. Agronomic data uploaded to Dataverse: Feb. 2018 2. Farmer trainings/ workshops / field days report uploaded on Africa RISING West Africa Wiki page: Feb. 2018 3. Promotional documents of varieties based on farmers' feedback uploaded on Africa RISING West Africa Wiki page: Feb. 2018 4. Scientific manuscript submitted to TSI journal: 2019	Deviation from Planned Milestone 1. YES, data still in processing 2. NO 3. YES, with funds limit/cutting farmers field visit was not organized in the villages 4. NO, but need second year data	Achievements towards Output A total of 120 farmers were trained in trials implementation. Following this training, 62 trials including dual purpose sorghum and hybrids were have been effectively implemented in Bougouni and Koutiala's farmers fields and technologiques parks. Data of the trials have been collected and analyses are still on-going. Farmers participatory evaluation enabled identification of two dual purpose varieties and two hybrids for their use in the target zones. About the agronomic practices, DAP+urea and cow manure give yield advantage compared to "farmers practice = no fertilizer" in most of situations but the results need to be confirmed with second year data

## Tables and graphs in support of achievements



Photo 1 Farmers taking notes during training sessions



Photo 2 Women farmers appreciating the varieties and hybrids in the field at M'Pessoba





Photo 3 Men farmers appreciating the varieties and hybrids in the field at M'Pessoba



Soubatimi in the technology park of Bougouni





Soubatimi in the technology park of Bougouni

Table 1: Situation of trials implemented in 2017 and managed by farmers in Bougouni and Koutiala zones

Zone	Village	Type of trial		Testers per village	
		Dual purpose	Hybrid	Men	Women
Koutiala	Zanzoni	3	2	5	0
	Sirakele	3	2	5	0
	N'Golonianasso	3	2	4	1
	Namponsela	3	1	3	1
	M'Pessoba	2	2	3	1
	Technologique Park/M'Pessoba	1	1	-	-
	<b>Total Koutiala</b>	<b>15</b>	<b>10</b>	<b>20</b>	<b>3</b>
Bougouni	Dieba	4	7	11	0
	Flola	4	2	5	1
	Madina	6	6	9	3
	Siribila	4	2	6	0
	Technologique Park/Flola	1	1		
	<b>Total Bougouni</b>	<b>19</b>	<b>18</b>	<b>31</b>	<b>4</b>

<b>TOTAL</b>	<b>Koutiala and Bougouni</b>	<b>34</b>	<b>28</b>	<b>51</b>	<b>7</b>
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*Note: Two trials (one dual purpose sorghum and other on hybrids) were implemented in both Bougouni and Koutiala technology parks.*

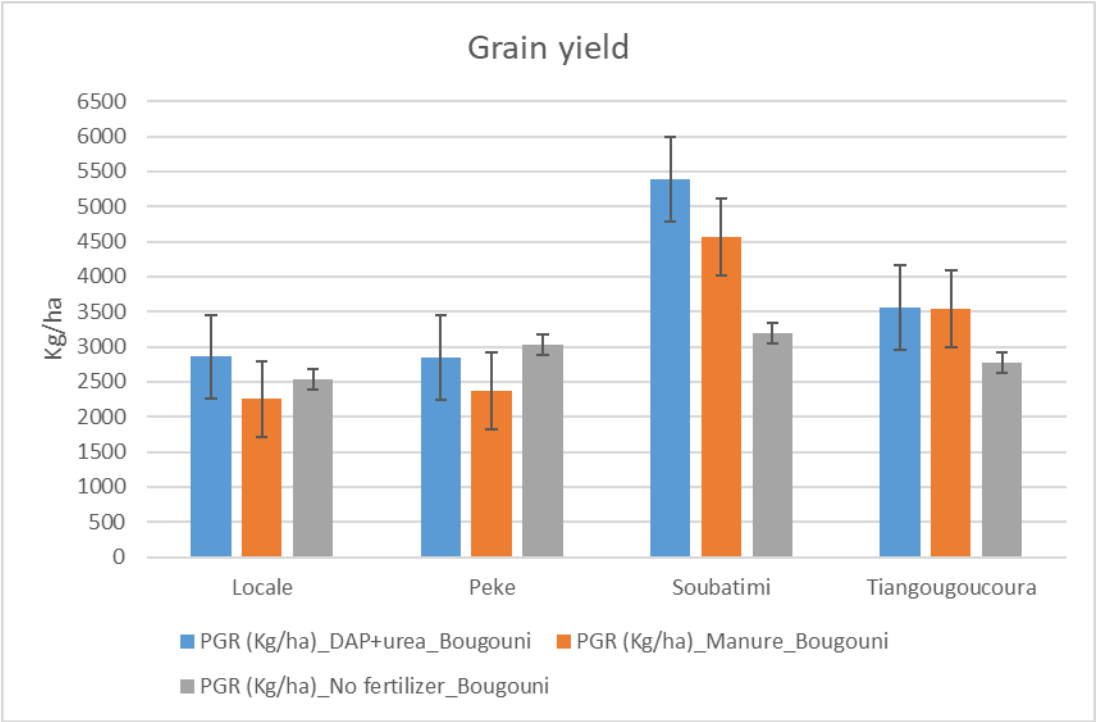


Fig 1. Grain yield of dual purpose sorghum in Bougouni, following agronomic practices

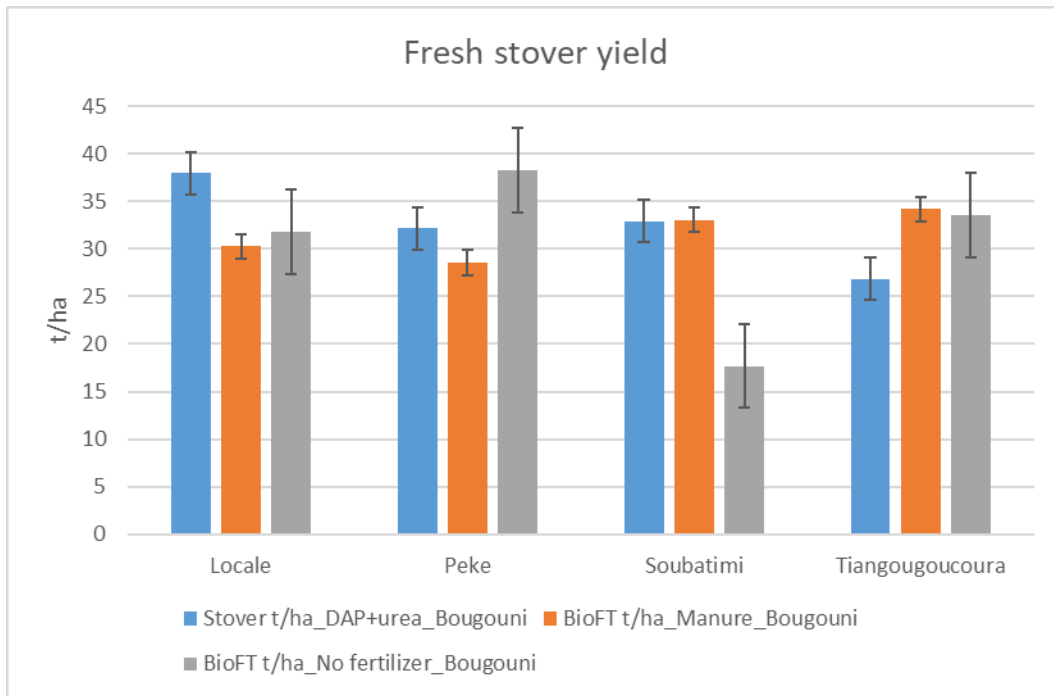


Fig 2. Fresh stover yield of dual-purpose sorghum in Bougouni, following agronomic practices

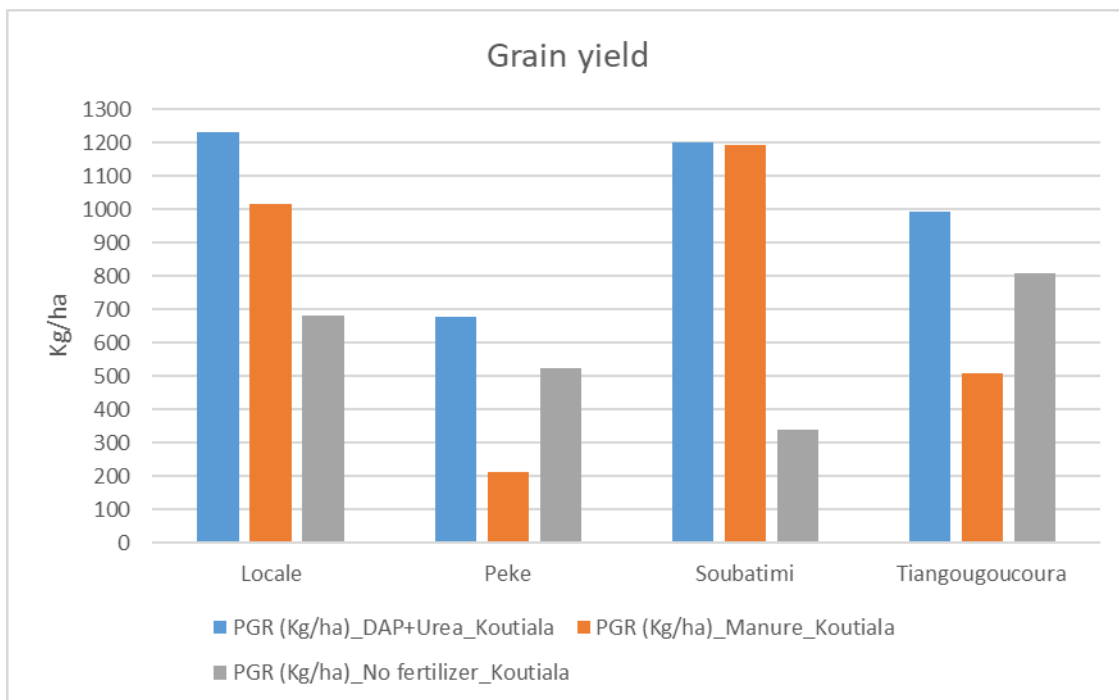


Fig 3. Grain yield of dual purpose sorghum in Koutiala, following agronomic practices



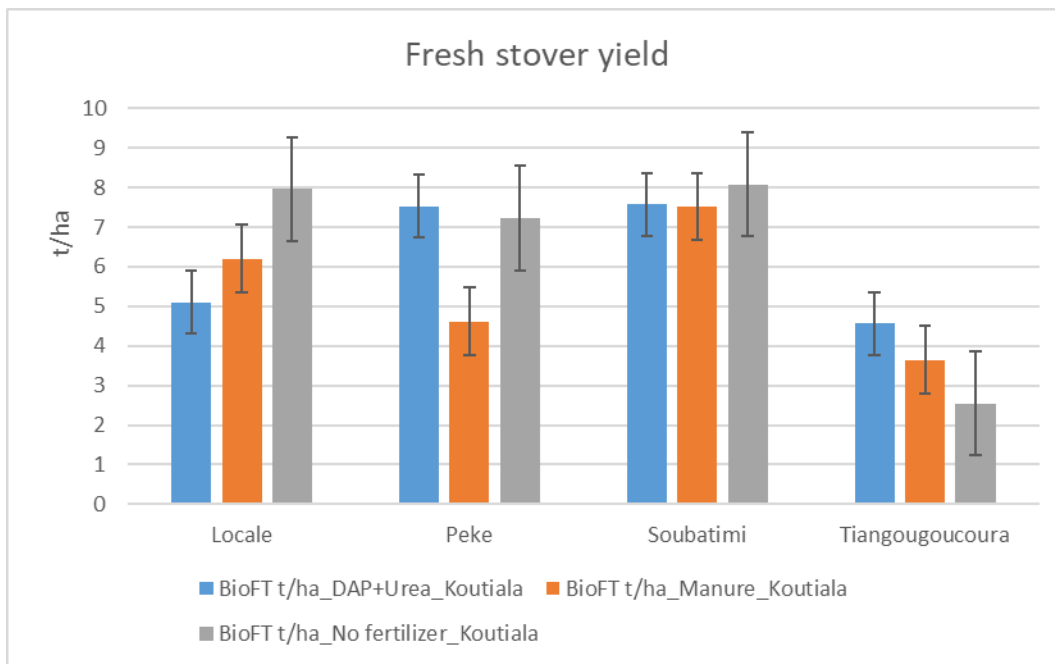


Fig 4. Fresh stover yield of dual purpose sorghum in Koutiala, following agronomic practices

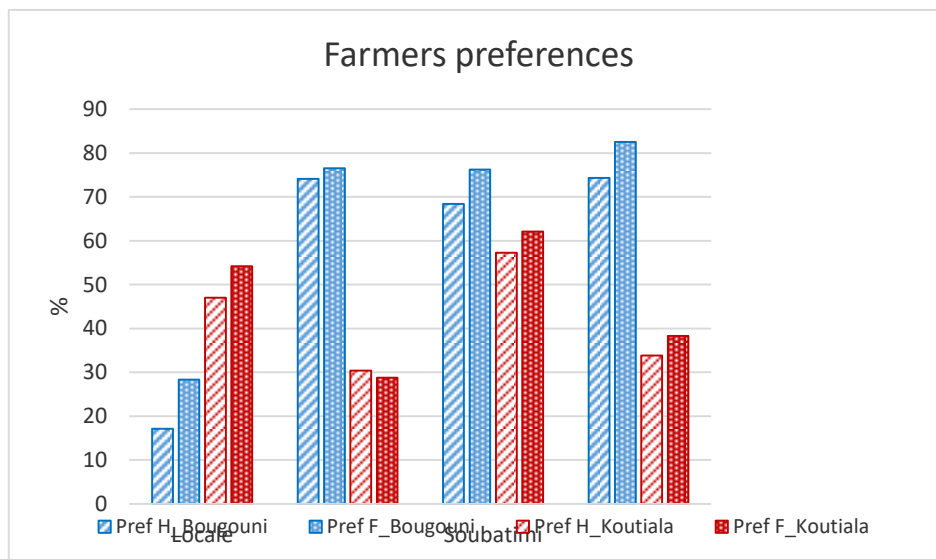


Fig 5. Farmers' preferences of dual purpose sorghum varieties in Bougouni and Koutiala

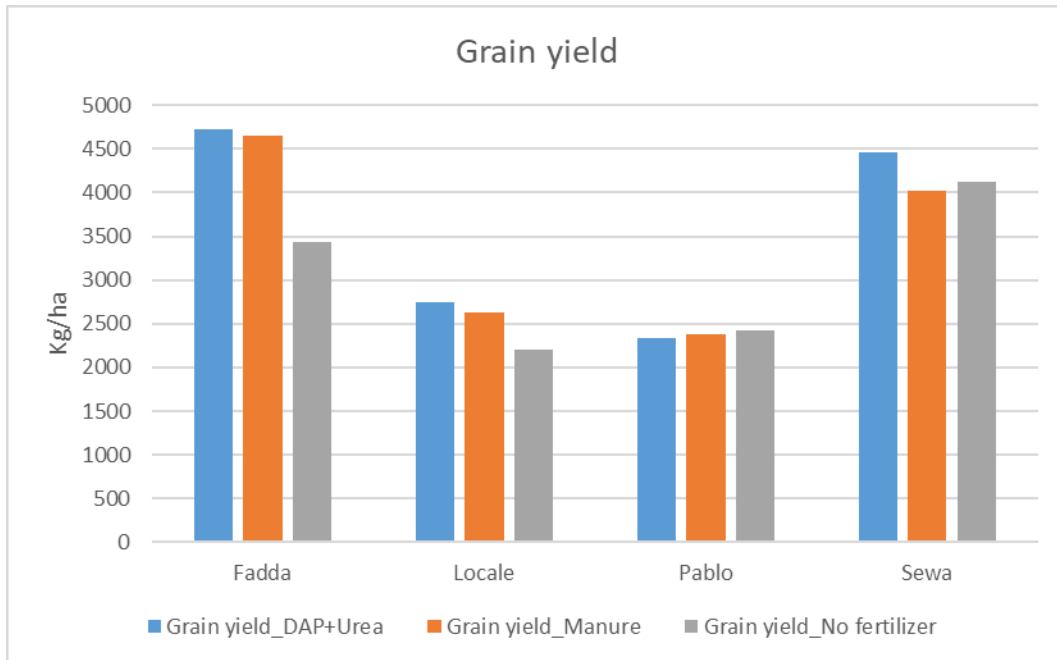


Fig 6. Grain yield of sorghum hybrids in Bougouni, following agronomic practices

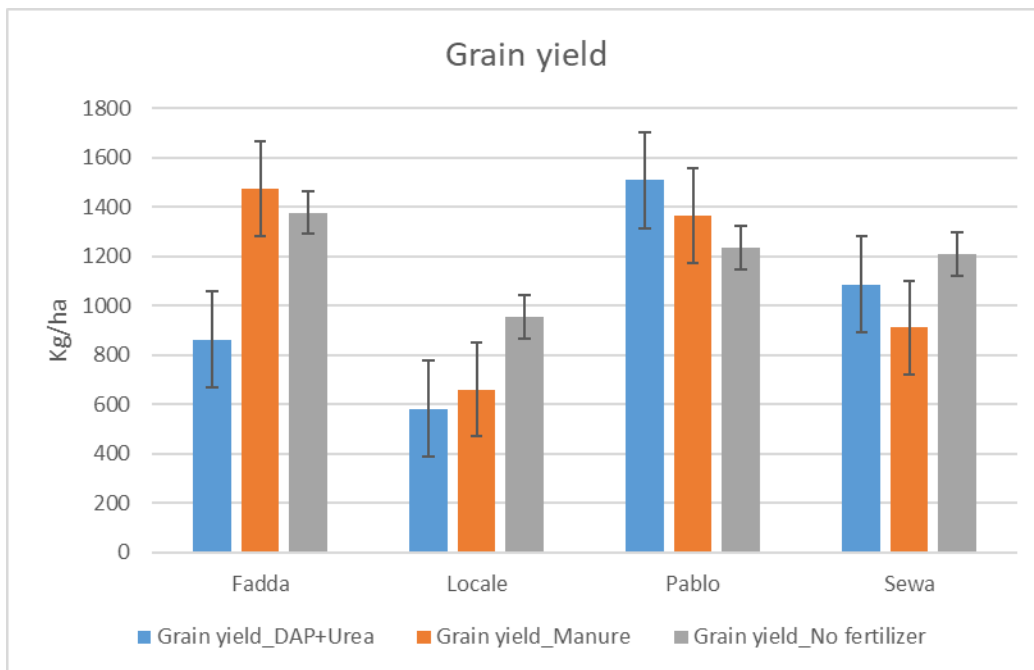


Fig 7. Grain yield of sorghum hybrids in Koutiala, following agronomic practices

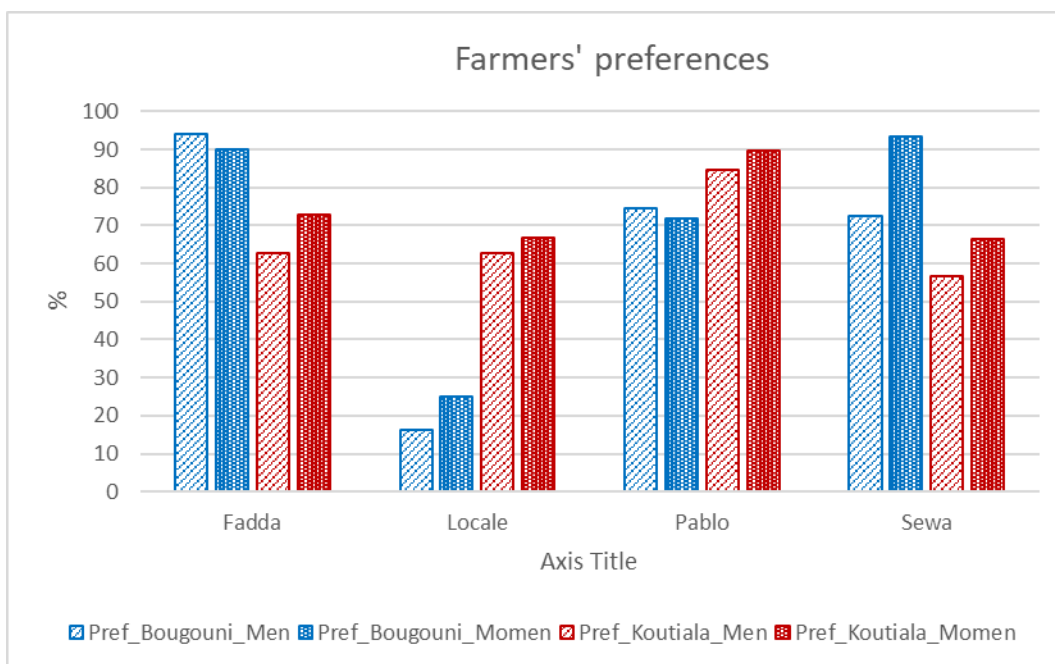


Fig 8. Farmers' preferences of sorghum hybrids varieties in Bougouni and Koutiala

### Analysis, interpretation and discussion of achievements

A total of 34 trials with three dual purpose varieties (soubatimi, Tiandougou Coura and Peke) and 28 trials with three hybrids (Pablo, Fadda and Sewa) were implemented respectively in Koutiala and Bougouni along with one check selected by farmers in each village. Four trials were implemented in the technologiques park while the rest, 58 were implemented in farmers fields and managed by them. Among the testers, 23% are women. In addition to the variety, agronomic practice such as type of fertilizer is a main factor. So, Chemical fertilizer (DAP+urea) and Cow manure were compared to the practice mostly used by farmers in sorghum production (no fertilizer). In the initial workplan, 95 trials were planned to be implemented but during planning meeting with farmers they suggested to reduce the number of farmers involve in the first year and then increase (if need) the number in the second year. The activity is new for them and the proposition done would allow them to get basic experience with the first year trials. So, 61% of the trials planned were effectively implemented considering farmers suggestion.

Only the results of trials (hybrids and dual purpose sorghum) conducted on station are presented in this report. The analysis of data collected in farmers is still in progress.

#### (1) Key results for dual-purpose sorghum varieties trials

In the technology park of Bougouni, Soubatimi yield was 5.4 tons/ha with DAP+urea, 4.5 tons/ha with manure plots while its yield was only 3 t/ha without fertilizer. In all these conditions, the local variety yields was below 2.8 t/ha. The yield of Tiandoudoucoura was also higher compared to the check while Peke yielded similar to the check. Stover yield was over 25 t/ha. At Koutiala, the field was poor and the maximum grain yield obtained with Soubatimi was only 1.2 t/ha.

Through farmers participatory selection, Soubatimi was identified as the the dual-purpose sorghum variety preferred by farmers in Bougouni and in Koutiala. The variety Tiandougoucoura is only preferred in Bougouni. These two improved varieties were preferred by farmers than the local check (Figure 5) . The difference between chemical fertilizer and the manure one was not significant. The difference between the effect of each type of fertilizer and the no fertilizer on yield was however significant.

## (2) Key results for hybrids sorghum varieties trials

While in Bougouni the effect of fertilizer (DAP+urea or manure) was significant on grain yield with a clear superiority of Fadda (and Sewa (Figure 6), in Koutiala, the advantage of fertilizer in grain yield was not significant and Pablo, follow by Fadda exhibited the higher yields.

Farmers preference was high for Fadda in Bougouni, follow by Sewa while in Koutiala the preferred hybrid was Pablo (Fig 8). These preferences seem more associated to the grain yield.

## **Highlight SI indicators and their defining metrics**



## B.6. Synthesis

Use the SI indicator results to illustrate how outputs under the 4 outcomes are defining your innovation/technology.

## B.7. Capacity Building

Tabulate: Type/title of training, where, when, number and category of people trained

Training courses took place in the technology parks of Africa Rising in M'Pessobo/Koutiala (May 27, 2017) and in Madina/Bougouni (May 29, 2017). These trainings were in banbanakan, local language and focused on the implementation and management of Sorgho agronomic trials in the intervention villages. A total of 37 farmers (Women = 27%), one staff from NGO and 03 technicians from AR program were trained in the two zones (Table 2).

In addition to farmers capacity building, two students were trained, one (Diakite Kaba Badjiri) for Master I degree/Engineer degree and the other one (Keita Abdoulaye) for the technician level. They all successfully defended their theses (attached) and got graduation. The activities were co-funded by Africa Rising and the McKnight\_Dual purpose sorghum and cowpea projects.

**Table 2. Training on “Implementation and management of agronomic trials”**

Training topic	Zone /Date	Farmers		Extension service (NGO)		ICRISAT_AR technicians	
		Men	Women	Men	Women	Men	Women
Implementation and management of agronomic trials in Koutiala	Koutiala (27/05/2017)	15	4	1	0	2	0
Implementation and management of agronomic trials in Bougouni	Bougouni (29/05/2017)	12	6	0	0	1	0
	<b>Total</b>	<b>27</b>	<b>10</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>

## **Section C. Problems/challenges and measures taken**

## **Section D. Partnership/linkages with other projects**

The seeds of varieties used in these trials were produced in off season through [McKnight Seed systems III project](#). Also, the results of the AR trials on dual-purpose sorghum will complete those already obtained with [McKnight Dual-purpose Sorghum and Cowpea](#).

## **Section E. Lessons learned**

Early and proper planning of activities, associated to good resources (funds and technical staff) are key to successfully conduct trials on-farm.

## **Section F. Monitoring and Evaluation**

### **F.1. Feed the Future indicators**

Tabulation with the following columns: (i) FtF indicator, (ii) Annual target (iii) Progress toward target, (iv) Segregation, (v) explanation for over/under achievement (only for full report)

Info must also be provided to the Africa RISING Economist and/or to the project M&E specialist when needed for reporting to USAID FTFMS (usually during October each year) using PMMT.

### **F.2. Custom indicators**

Tabulate (i) Custom indicator, (ii) Annual target, (iii) Progress toward target, (iii) explanation for over/under achievement

## **Section G. Success stories**